CLAIMS

1. A magnetic head including a read head structure, comprising:

a free magnetic layer, including a central region and outwardly disposed end regions thereof;

at least two anti-parallel coupled magnetic layers being disposed above said end regions of said free magnetic layer.

2. A magnetic head as described in claim 1 wherein a thin film nonmagnetic layer is disposed between said at least two said magnetic layers.

3. A magnetic head as described in claim 1 wherein a magnetic seed layer is disposed on top of said end regions of said free magnetic layer, and a first one of said at least two magnetic layers is disposed on top of said seed layer

4. A magnetic head as described in claim 3 wherein said seed layer is formed with a BCC crystal structure.

5. A magnetic head as described in claim 4, wherein said seed layer is comprised of CoFeCr, and has a thickness of from approximately 10 Å to approximately 50 Å.

6. A magnetic head as described in claim 3 wherein a thin film nonmagnetic layer is disposed on top of said first magnetic layer, and a second one of said at least two magnetic layers is disposed on top of said nonmagnetic layer.

7. A magnetic head as described in claim 6 wherein said first and second magnetic layers are comprised of CoPtCr, and said first magnetic layer has a thickness that is from approximately 20 Å to approximately 30 Å and said second magnetic layer has a thickness of from approximately 30 Å to approximately 80 Å.

8. A magnetic head as described in claim 7 wherein said non-magnetic layer is comprised of Ru and has a thickness that is approximately 8 Å.

9. A magnetic head as described in claim 7 wherein said seed layer has a thickness, and the total thickness of said seed layer plus said first magnetic layer is greater than the thickness of said second magnetic layer.

10. A magnetic head as described in claim 1, wherein said anti-parallel coupled magnetic layers have a net magnetostatic field in the same direction as a magnetic field of said free layer.

11. A magnetic head as described in claim 3, wherein a third thin film magnetic layer is disposed between said first magnetic layer and said nonmagnetic layer, and a fourth magnetic layer is disposed between said nonmagnetic layer and a second magnetic layer.

12. A magnetic head as described in claim 11, wherein said third magnetic layer and said fourth magnetic layer are comprised of CoFe.

13. A magnetic head including a GMR sensor, comprising:

a plurality of thin film layers forming a GMR sensor, wherein at least one of said layers is a free magnetic layer, said free magnetic layer including a central portion and two outwardly disposed end regions thereof;

a magnetic seed layer being disposed upon said end regions;

a first magnetic layer being disposed upon said seed layer;

a nonmagnetic layer being disposed upon said first magnetic layer;

a second magnetic layer being disposed upon said nonmagnetic layer;

wherein said first magnetic layer is formed with a magnetic field and said second magnetic layer is formed with a magnetic field, and wherein the magnetic fields of said first magnetic layer and said magnetic layer are anti-parallel coupled.

14. A magnetic head as described in claim 13, wherein said free magnetic layer is formed with a magnetic field in a first direction and said anti-parallel coupled magnetic field of said first magnetic layer and said second magnetic layer is formed with a magnetostatic bias in the same direction as the magnetic field of said free magnetic layer.

15. A magnetic head as described in claim 13 wherein said seed layer is formed with a BCC crystal structure.

16. A magnetic head as described in claim 15 wherein said seed layer is comprised of CoFeCr, and said first magnetic layer is comprised of CoPtCr, and said nonmagnetic layer is comprised of Ru, and said second magnetic layer is comprised of CoPtCr.

17. A magnetic head as described in claim 16 wherein a layer being comprised of CoFe is disposed between said first magnetic layer and said nonmagnetic layer, and a second layer comprised of CoFe is disposed between said nonmagnetic layer and said second magnetic layer.

18. A hard disk drive including a magnetic head having a read head structure, comprising:

a free magnetic layer, including a central region and outwardly disposed end regions thereof; at least two anti-parallel coupled magnetic layers being disposed above said end regions of said free magnetic layer.

19. A hard disk drive as described in claim 18 wherein a thin film nonmagnetic layer is disposed between said at least two magnetic layers.

20. A hard disk drive as described in claim 18 wherein a magnetic seed layer is disposed on top of said end regions of said free magnetic layer, and a first one of said at least two magnetic layers is disposed on top of said seed layer

21. A hard disk drive as described in claim 20 wherein said seed layer is formed with a BCC crystal structure.

22. A hard disk drive as described in claim 21, wherein said seed layer is comprised of CoFeCr, and has a thickness of from approximately 10 Å to approximately 50 Å.

23. A hard disk drive as described in claim 20 wherein a thin film non-magnetic layer is disposed on top of said first magnetic layer, and a second one of said at least two magnetic layers is disposed on top of said non-magnetic layer.

24. A hard disk drive as described in claim 23 wherein said first and second magnetic layers are comprised of CoPtCr, and wherein said first magnetic layer has a thickness that is from approximately 20 Å to approximately 30 Å and said second magnetic layer has a thickness that is from approximately 30 Å to approximately 80 Å.

25. A hard disk drive as described in claim 24 wherein said non-magnetic layer is comprised of Ru and has a thickness that is approximately 8 Å.

26. A hard disk drive as described in claim 24 wherein said seed layer has a thickness, and the total thickness of said seed layer plus said first magnetic layer is greater than the thickness of said second magnetic layer.

27. A hard disk drive as described in claim 18, wherein said anti-parallel coupled magnetic layers have a net magnetostatic field in the same direction as a magnetic field of said free layer.

28. A hard disk drive as described in claim 20, wherein a third thin film magnetic layer is disposed between said first magnetic layer and said non-magnetic layer, and a fourth magnetic layer is disposed between said non-magnetic layer and a second magnetic layer.

29. A hard disk drive as described in claim 28, wherein said third magnetic layer and said fourth magnetic layer are comprised of CoFe.

30. A method for fabricating a read head structure of a magnetic head, comprising the steps of:

fabricating a plurality of thin film layers to create a GMR sensor, said layers including a free magnetic layer having a central portion and outwardly disposed end portions;

fabricating at least two magnetic layers above said end portions of said free magnetic layer, wherein said at least two magnetic layers have magnetic fields that are anti-parallel coupled.

31. A method for fabricating a read head structure as described in claim 30, including the steps of:

fabricating a seed layer on top of said end portions of said free magnetic layer;

fabricating a first said magnetic layer on top of said seed layer;

fabricating a nonmagnetic layer above said first magnetic layer; and

fabricating a second said magnetic layer above said nonmagnetic layer.

32. A method for fabricating a read head structure as described in claim 31, wherein a net magnetostatic field is produced by said anti-parallel coupled magnetic layers, said net magnetostatic field being formed in the same direction as a magnetic field of said free magnetic layer.

33. A method for fabricating a read head structure as described in claim 31 wherein said seed layer is comprised of CoFeCr, said first magnetic layer is comprised of CoPtCr, said nonmagnetic layer is comprised of Ru and said second magnetic layer is comprised of CoPtCr.

34. A method for fabricating a read head structure as described in claim 33 wherein said seed layer is fabricated with a BCC crystal structure.

35. A method for fabricating a read head structure as described in claim 34 including the further steps of fabricating a layer comprised of CoFe between said first magnetic layer and said nonmagnetic layer, and fabricating a second layer comprised of CoFe between said nonmagnetic layer and said second magnetic layer.